

## Ohm's Law Practice Worksheet

An alarm clock draws 0.5 A of current when connected to a 120 volt circuit. Calculate its resistance.

$$V = IR \quad / \quad 120 = (0.5)(R)$$

$$R = 240 \Omega$$

A subwoofer needs a household voltage of 110 V to push a current of 5.5 A through its coil. What is the resistance of the subwoofer?

$$V = IR \quad / \quad 110 = (5.5)R$$

$$R = 20 \Omega$$

A walkman uses a standard 1.5 V battery. How much resistance is in the circuit if it uses a current of 0.01 A?

$$V = IR \quad / \quad 1.5 = (0.01)(R)$$

$$R = 150 \Omega$$

A circuit contains a 1.5 volt battery and a bulb with a resistance of 3 ohms. Calculate the current.

$$V = IR \quad / \quad 1.5 = I(3)$$

$$I = 0.5 \text{ A}$$

What current flows through a hair dryer plugged into a 120 Volt circuit if it has a resistance of 25 ohms?

$$V = IR \quad / \quad 120 = I(25)$$

$$I = 4.8 \text{ A}$$

What happens to the current in a circuit if a 1.5-volt battery is removed and is replaced by a 3-volt battery?

INCREASES (DOUBLES)

If a toaster produces 12 ohms of resistance in a 120-volt circuit, what is the amount of current in the circuit?

$$V = IR \quad / \quad 120 = I(12)$$

$$I = 10 \text{ A}$$

A 12 Volt car battery pushes charge through the headlight circuit resistance of 10 ohms. How much current is passing through the circuit?

$$V = IR \quad / \quad 12 = I(10)$$

$$I = 1.2 \text{ A}$$

How much voltage would be necessary to generate 10 amps of current in a circuit that has 5 ohms of resistance?

$$V = IR \quad / \quad V = (10)(5)$$

$$V = 50 \text{ V}$$

An electric heater works by passing a current of 100 A through a coiled metal wire, making it red hot. If the resistance of the wire is 1.1 ohms, what voltage must be applied to it?

$$V = IR \quad / \quad V = (100)(1.1)$$

$$V = 110 \text{ V}$$

A light bulb has a resistance of 5 ohms and a maximum current of 10 A. How much voltage can be applied before the bulb will break?

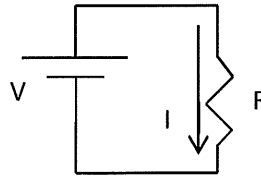
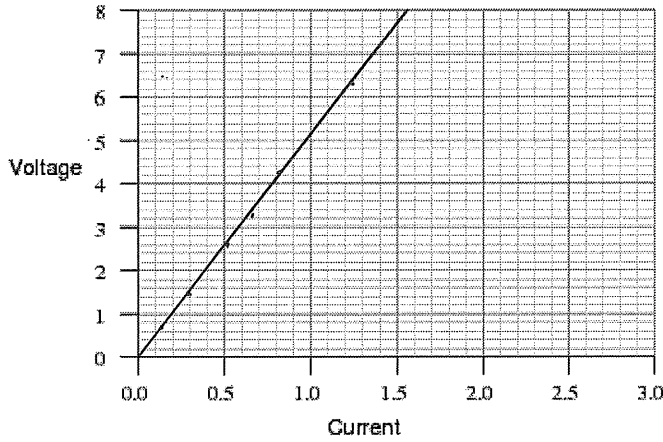
$$V = IR \quad / \quad V = (10)(5)$$

$$V = 50 \text{ V}$$

What happens to the current in a circuit if a 10Ω resistor is removed and replaced by a 20Ω resistor?

DECREASES (HALVES)

Suppose you did a lab with this simple circuit and got the following data. Plot the points of the provided graph.



Voltage (V)	Current (A)
0.65	0.12
1.41	0.29
2.55	0.51
3.28	0.67
4.11	0.81
6.15	1.23

What mathematical relationship do you see between voltage and current?

*Directly proportional.*

Is the resistance constant?

*yes! The slope is resistance*

Solve for the unknown in each of these circuits

